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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/666,916 | 09/19/2003 | Dino J. Farina | 3558.1003-008 | 6481 |
| 21005 | 7590 | 11/01/2004 | EXAMINER | |
| HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133 | | | JOHNS, ANDREW W | |
| | | ART UNIT | PAPER NUMBER | |
| | | | 2621 | |

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/666,916 | FARINA |
| | Examiner Andrew W. Johns | Art Unit 2621 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 40 and 41 is/are allowed.
- 6) Claim(s) 1,5,13,17,20,24,32,36 and 39 is/are rejected.
- 7) Claim(s) 2-4,6-12,14-16,18,19,21-23,25-31,33-35,37 and 38 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>9/19/03, 3/18/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Drawings

1. The drawings filed on 19 September 2003 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-5948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

Claim Rejections - 35 U.S.C. § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

10 A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15 3. Claims 1, 5, 13, 17, 20, 24, 32, 36 and 39 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sankar et al. (article entitled "Time-Resolved Measurement of Liquid Mass Distribution in a Fuel Injector Spray Using an Optical Patternator").

With respect to claim 1, Sankar et al. teaches a method of image analysis comprising providing image data representative of a set of images of a spray plume (second paragraph on page 267), each of the images being representative of a density characteristic of the spray plume along a plane that intersects the spray plume (i.e., the measurement plane formed by the light sheet projector shown in Figure 1 and described in the second and third paragraphs on page 267); and measuring one or more spray plume parameters associated with the spray plume within one or more of the images (i.e., the spatial distribution of the liquid mass; second paragraph on page 268).

With respect to claim 20, Sankar et al. teaches a system (shown generally in Figure 1) for analyzing image data representative of a set of images of a spray plume (second paragraph on page 267), each of the images being representative of a density characteristic of the spray plume along a plane that intersects the spray plume (i.e., the measurement plane formed by the light sheet projector shown in Figure 1 and described in the second and third paragraphs on page 267), comprising a processing device for receiving the set of images (i.e., the PC with Pentium Pro processor; second paragraph page 268, fourth line); and a controller, associated with the processing device (i.e., the software control described in the final paragraph on page 267), that provides a user interface (i.e., the displayed images; second line in the final paragraph on page 10 267) for controlling the processor to measure one or more spray plume parameters associated with the spray plume within one or more of the images (i.e., the spatial distribution of the liquid mass; second paragraph on page 268).

In addition, Sankar et al. further teaches defining a shape on the one or more image so as to delineate an area of the spray plume and measuring one or more spray plume parameters 15 within the area (i.e. using the user selectable masks to define the shape of the plume; second paragraph on page 268), as further required by claims 5 and 24; integrating the set of images so as to exhibit a summary representation of the images and measuring one or more parameters of the summary representation (i.e., the images are averaged to smooth out statistical variations; lines 8-9 in the fourth paragraph on page 268), as set forth in claims 13 and 32; that at least one 20 of the images corresponds to a cross-sectional density characteristic alone a plane substantially normal to a flow direction centerline of the spray plume (as shown in Figure 1 the images correspond to a cross-sectional section of the spray plume), as defined in claims 17 and 36; and that the processing device includes a computer system (i.e., the PC with Pentium Pro processor;

second paragraph page 268, fourth line) executing software operative to analyze the image data (i.e., the software control described in the final paragraph on page 267), as further stipulated by claim 39. Therefore, Sankar et al. meets each of the limitations of each of these claims and anticipates the claimed invention.

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Allowable Subject Matter

4. Claims 40-41 are allowed.
5. Claims 2-4, 6-12, 14-16, 18-19, 21-23, 25-31, 33-35 and 37-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Conclusion

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Johns whose telephone number is (703) 305-4788. The examiner is normally available Monday through Friday, at least during the hours of 9:00 am to 3:00 pm Eastern Time. The examiner may also be contacted by e-mail using the address: andrew.johns@uspto.gov. (Applicant is reminded of the Office policy regarding e-mail communications. See M.P.E.P. § 502.03)

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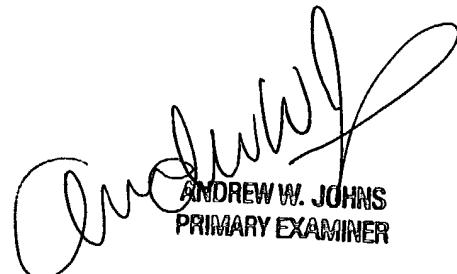
If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached on (703) 305-4706. The fax phone number for this art unit is (703) 872-9306. In order to ensure prompt delivery to the examiner, all unofficial communications should be clearly labeled as "Draft" or "Unofficial."

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center Receptionist whose telephone number is (703) 305-4700.

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A. Johns
27 October 2004



ANDREW W. JOHNS
PRIMARY EXAMINER